



MARKED-UP VERSION OF THE AMENDED CLAIMS:

Claims

1. (**amended**) A device for sorting of laundry pieces comprising

a recognition device (40) for recognizing of different types of laundry pieces (12);

a plurality of collection devices for receiving the different types of laundry pieces;

a transport device disposed within a reach of the recognition device and disposed in a delivery relationship to the plurality of collection devices (14, 16, 18) for transferring the laundry pieces from the recognition device (40) to the collection devices (14, 16, 18), wherein the recognition device 40 monitors a region 44 by laser 42;

-- with the data processing plant (DVA 50) for processing of the data signals (46) received from the recognition device (40), such that predetermined collection devices (14, 16, 18) [can be] are selected depending on the data signals (46) and [can be] are controlled for receiving laundry pieces coordinated to the data signals (46), wherein

-- at least one register device (62, 64, 66, 68, 70) is predisposed to the collection devices (14, 16, 18), for registering of the laundry pieces (12) disposed in the

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transport device (20, 60) and for generating a corresponding registering signal (48),

-- the register signal (48) [can be] is sent from the registering device (62, 64, 66, 68, 70) to the data processing plant (50),

-- the register signal (48) associated with a certain piece of laundry together with the data signal (46) corresponding to the certain piece of laundry is processed in the data processing plant (50) to a control signal (74),

-- the control signal (74) is employable for controlling a predetermined collection device (14, 16, 18) for receiving of the laundry piece corresponding to the control signal.

3. **(amended)** The device according to claim 1 wherein in each case a blower device (52, 54, 56) is coordinated to the collection device (14, 16, 18),

wherein the blower device (52, 54, 56) is connected with respect to control to the data processing plant (50),

wherein a control signal (74) delivered by the data processing plant (50) directs the corresponding blower device (52, 54, 56) for generating of a stream of air, wherein this stream of air is directed horizontally and perpendicularly to the direction of [against] the transport device (60) in the region of the laundry (12)

conveyed separately each other and disposed in the collection device area corresponding to this blower device, such that the laundry (12) [can be] is blown into the collection container (14, 16, 18),
wherein a control signal (74) delivered by the data processing plant (50) is re-generated and the corresponding blower device (52, 54, 56) generates a stream of air when laundry (12) is not blown into container.

9. (amended) The device according to claim 1 wherein at least one feed device (24, 26) of the supply device (20) is such predisposed that a predetermined number of laundry pieces (12) with a mutual distance not falling below a predetermined minimum value [and/or] or a not lower time interval is transferable to the supply device (20).

10. (amended) The device according to claim 9 wherein the feed device (24, 26) includes a first transport band (90) exhibiting at least individual compartments, wherein the contents of the first transport band [can be] is emptied onto a transport band leading to the recognition device (40).

11. (amended) The device according to claim 9 wherein the feed device includes at least one funnel (24, 26),

wherein the contents of the funnel (24, 26) [can be] is emptied onto a transport band (20) leading to the recognition device (40).

12. (**amended**) The device according to claim 11 wherein the funnel (24,26) is furnished with a flap floor (32), wherein the flap floor (32) [can be] is [such] flipped open and flipped closed that the laundry pieces (12) falling out of the funnel (24, 26) [can be] are transferred to the recognition device (40) in each case with a mutual distance not falling below a predetermined minimum measure and/or a time interval not falling below a predetermined minimum measure.

14. (**amended**) The device according to claim 12 wherein several such funnels (24, 26) are present and disposed, wherein the flap floors (32) of all funnels (24, 26) are [can only jointly be] flipped open only jointly and [jointly be] are flipped closed only jointly.

18. (**amended**) The device according to claim 17 wherein the transport device includes a transport band; wherein the collection devices are disposed along the transport band in transport direction; wherein the control means includes a first blower device coordinated to the first collection device and a

second blower device coordinated to the second collection device;

wherein a control signal delivered by the data processing plant directs the corresponding blower device to generate of a stream of air;

wherein this stream of air is directed against the transport band in the region of the laundry piece disposed in a collection device area of the transport band corresponding to this blower device, such that the laundry piece is blown into the respective collection container;

further comprising

a second registration device associated with the second collection device[;]_.

19. **(amended)** The device according to claim 18 wherein the first registering device is predisposed and preswitched to the first collection device; wherein the second registering device is predisposed and preswitched to the second collection device[;]_.

20. **(amended)** The device according to claim 18 wherein the first registering device is disposed following to the first collection device; wherein the second registering device is disposed following to the second collection device[;]_.

21. (**amended**) The device according to claim 17 wherein the transport device includes a supply device for transporting the laundry pieces to the recognition device);

further comprising

a feed device of the supply device being such predisposed that a predetermined number of laundry pieces with a mutual distance not falling below a predetermined minimum value [and/or] or a not lower time interval is transferable by the feed device to the supply device;

wherein the feed device includes a first transport band exhibiting at least individual compartments,

wherein the first transport band is disposed such that the contents of the first transport band [can be] is emptied onto a transport band leading to the recognition device;

wherein the feed device includes a funnel, wherein the contents of the funnel is [to be] emptied onto the transport band leading to the recognition device;

wherein the funnel is furnished with a flap floor, wherein the flap floor is flappable open and flappable closed such that laundry pieces falling out of the funnel are transferred to the recognition device in each case with a mutual distance not falling below a predetermined minimum measure [and/or] or a time

interval not falling below a predetermined minimum measure;

wherein the flap floor is formed from a plurality of flap parts.

22. **(amended)** The device according to claim 21 further comprising

a second funnel;

a second flap floor associated with the second funnel, wherein the second flap floors of the second funnel is only jointly flappable open and only jointly flappable closed together with the first flap floor of the first funnel.

further comprising

a first sensor device for recognition of a predetermined number or volume of laundry pieces present within the first funnel;

a second sensor device for recognition of a predetermined number or volume of laundry pieces present within the second funnel[;].

24 **(amended)**. The method according to claim 23 further comprising

including a transport band in the transport device; disposing the plurality of collection devices along the transport band in a transport direction;

coordinating a blower device to one of the plurality of the collection device;
connecting the blower device to the data processing plant for controlling the blower device;
furnishing each one of the plurality of collection devices with a register device;
delivering a control signal to the data processing plant for directing the corresponding blower device to generate a stream of air;
directing this stream of air horizontally and perpendicularly to the direction of the transport device in the region of the certain laundry piece disposed in the collection device area corresponding to this blower device;
blowing the certain laundry piece into the predetermined collection container.

27. (amended) The device according to claim 23 further comprising
furnishing a supply device for transporting of laundry pieces to the recognition device;
predisposing a feed device of the supply device such that a predetermined number of laundry pieces with a mutual distance not falling below a predetermined

minimum value [and/or] or a not lower time interval is transferable to the supply device;
furnishing a first transport band exhibiting at least individual compartments to the feed device;
emptying a contents of a first transport band onto a transport band leading to the recognition device;
furnishing at least one funnel to the feed device;
emptying a contents of the funnel onto the transport band leading to the recognition device;
furnishing the funnel with a flap floor;
flipping open and flipping closed the flap floor such that laundry pieces falling out of the funnel are transferred to the recognition device in each case with a mutual distance not falling below a predetermined minimum measure [and/or] or a time interval not falling below a predetermined minimum measure.

28. (**amended**) The device according to claim 23 further comprising
employing and disposing several funnels each furnished with a flap floor;
[only jointly flipping open and only jointly be flipped closed the flap floors of all funnels;]
wherein the flap floors of all funnels are flipped open only jointly and are flipped closed only jointly;

furnishing a sensor device for recognition of a predetermined number or volume of laundry pieces within each [the] funnel;

disposing the sensor device at each flap part for recognition of a predetermined number or volume of laundry pieces on each flap part.

DETAILED ACTION

The Office Action refers to Specification

1. 35 U.S.C. 112, first paragraph, requires the specification to be written in "full, clear, concise, and exact terms." The specification is replete with nonsensical English terms and with terms which are not clear, concise and exact. The specification should be revised carefully in order to comply with 35 U.S.C. 112, first paragraph. Examples of some unclear, inexact or verbose terms used in the specification are: "concerns and apparatus" (p.2) and "the in each case" (p. 4-18).

2. As a result, a substitute specification including the claims is required pursuant to 37 CFR 1.125(a). A substitute specification filed under 37 CFR 1.125(a) must only contain subject matter from the original specification and any previously entered amendment under 37 CFR 1.121. If the substitute specification contains additional subject matter not of record, the substitute specification must be filed under 37 CFR 1.125(b) and must be accompanied by: 1) a statement that the substitute specification contains no new matter; and 2) a marked-up copy showing the amendments to be made via the substitute specification relative to the specification at the time the substitute specification is filed.

Applicants respectfully agree.

The Substitute Specification has been made with language amended to avoid the questions raised in the Office Action.



APPARATUS FOR SORTING LAUNDRY PIECES

BACKGROUND OF THE INVENTION

1. Field of the invention

The present invention [concerns and] relates to an apparatus for sorting of laundry pieces. Such sorting for example is then required when different laundry pieces have to be washed according to different washing programs.

2. Brief Description of the Background of the Invention Including Prior Art

It is known to sort laundry pieces manually. Depending on the respective criteria of sorting, the concerned laundry pieces are individually thrown into a corresponding plurality of laundry containers. This sorting method can be slightly enhanced by predisposing a suction tube to the individual collection containers. The operator then only has to throw the laundry in the region of the suction opening of that tube, which leads to [the] in each case desired collection container. The throw speed and the hit accuracy can be increased thereby.

It is further known to throw laundry pieces through a frame. Such a frame however is less suitable for sorting and more suitable for counting of the individual laundry pieces, which are to be washed.

SUMMARY OF THE INVENTION

1. Purposes of the Invention

It is an object of the present invention to furnish an improved possibility of a sorting of laundry pieces.

These and other objects and advantages of the present invention will become evident from the description which follows.

2. Brief Description of the Invention

The present invention employs a recognition device known in principle in the state-of-the-art. In connection with such recognizing devices, the items to be identified in each case are furnished with a coding prior to washing. The coding can be read, that means the coding can be recognized. The recognition signal is compared in a data processing plant with a stored reference signal, such that different objects depending on the code applied in each case to the object can be automatically recognized.

The code is applied to the laundry prior to sorting according to the sorting device of the present

invention. As a rule this is performed by furnishing laundry pieces for example with a thread containing a coding, a thread piece or other textile or nontextile band. Then the coding present on the thread, the thread piece, or the other coding carrier present at the laundry piece is read by the recognition device and the read recognition signal is compared with a stored reference value. Depend on [the] in each case recognized special laundry piece, this special laundry piece is then fed to a predetermined collection device. The laundry pieces to be washed are here individually fed to the recognition device, individualized recognized by the recognition device and then a respective laundry piece is fed to the collection device coordinated to the laundry piece.

The transport device for transfer of laundry pieces from the recognition device to the collection device can advantageously be furnished with a transport band. The collection device can then be disposed easily surveyable in transport direction along the transport belt. The individual collection devices allow also to be moved away without problem, brought in position or, respectively exchanged from their so to speak aligned positions next to the transport band.

A blow method has proved to be particularly advantageous for the collection or, respectively, transfer of the laundry pieces from the transport

device as for example the transport band into the individual containers. The said individual laundry pieces resting on the transport belt can be blown off the transport belt by correspondingly disposed blowing nozzles such that the laundry pieces fall into the collection containers disposed next to the band.

The recognition device delivers its recognition signals to the data processing plant. The data processing plant is connected to the complete control and drive technology, such that the data processing can take into consideration the speed with which the laundry pieces are transported within the transport device for example on the transport band. The data processing plant can therefore know when the laundry piece recognized by the recognition device has arrived at [the] in each case predetermined collection device. For example, [the] in each case responsible blowing nozzles can be activated by the data processing plant.

While this controlling of the blowing nozzles and thereby blowing off of the laundry piece of the transport belt for example into the collection container in each case coordinated to this laundry piece is controlled through the speed of the transport belt, the controlling of the blowing nozzles can also be performed by registering devices for example predisposed to the blowing nozzles. The registry devices can be for example light barriers, which

registered the arrival of the laundry piece and then deliver a corresponding registration signal to the data processing plant. If the register device is disposed in front of the blowing device, the blow device can be controlled immediately or, respectively with a preceding delay through this register device and then through the data processing plant. If such a registering device is disposed in front of a group of blower devices and thereby in front of a group of collection containers, then ~~et~~ in each case proper blower nozzles can be switched on and thereby activated not in dependence of the registering signal but under consideration of the transport speed.

Possibly a register device is disposed in front of and behind of a blow device. While in the predisposed register device determines the arrival of a laundry piece and then, when it is the right laundry piece, activates the coordinated blower nozzles, also a register device disposed after leaving the blower nozzles can make sense. It can be determined with a postdisposed registering device, if the laundry piece also in fact, if desired and controlled, was blown off by the blower nozzles.

By employing a sensor device furnished as a light barrier, which runs cross from one side to the other side of the transport belt and thereby also reaches perpendicular through the blower corridor, it can be

achieved that the respective light barrier is present simultaneously both in front of as well as behind the blow device. In this manner, the light barrier cannot only signalize the arrival of a laundry piece but beyond that also signalize, if the laundry piece after leaving of the blower corridor still is present on the transport band.

According to an embodiment illustrated also in the drawing, laundry pieces are not fed immediately to the recognition device, but through a predisposed feed device, wherein the feed device is formed as a transport band. An arbitrary large number of feed devices can be disposed above the transport band, wherein the laundry pieces are thrown in individually into which feed devices in each case and the individual laundry pieces are transferred such to the feed device that the laundry pieces exhibit a mutual distance in transport direction, which mutual distance does not fall below a minimum value. The minimum value depends on the processing speed of the recognition device.

The feeding device formed as funnels is associated with the advantage that the laundry pieces falling from the funnel downward do not surpass a pre-given light space profile. The laundry pieces therefore are not disposed on too large an area on the belt. The larger in fact the laundry pieces are present on the belt, the larger the recognition device has to be formed

constructively and the more a large area will be required to be worked by the recognition device.

In order to achieve that the laundry pieces can be safely recognized in the recognition direction it has to be assured that the laundry pieces having a mutual distance, which does not fall below a certain predetermined minimum value, and/or having a time interval, which does not fall below a certain predetermined minimum value, are transferred to this recognition device. This can be accomplished by suitable control devices for emptying the funnel. It can be for example provided that flap floors of the funnels present are only jointly controlled and thereby only jointly opened.

It is furthermore possible to throw the laundry pieces not immediately into the funnels but to predispose a feed band to the funnels. This feed band can exhibit individual compartments, wherein the operating persons lay individual laundry pieces into the individual compartments. In this manner, the individual putting away of laundry pieces, which is performed by hand, can be realized in a simple way and free from interferences and at the same time a uniform feeding of the individual funnels is accomplished.

The novel features which are considered as characteristic for the invention are set forth in the appended claims. The invention itself, however, both

as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of specific embodiments when read in connection with the accompanying drawing.

BRIEF DESCRIPTION OF THE DRAWING

In the accompanying drawing, in which are shown several of the various possible embodiments of the present invention:

Fig. 1 is a perspective schematic view of a sorting device according to the invention.

Fig. 2 is a perspective view of a transport band for loading the laundry pieces onto the sorting device according to the invention.

DESCRIPTION OF INVENTION AND PREFERRED EMBODIMENT

In accordance with the present invention, the device 10 illustrated in Fig. 1 for sorting of laundry pieces 12 into individual and different collection containers 14, 16, 18 is furnished with an endless circulating transport band 20. The circulation speed of the endless circulating transport band 20 in the present example is of a constant value.

Two funnels 24, 26 are disposed above the endless circulating transport band 20 in transport direction 22. The laundry pieces 12 are thrown individually and

successively into the funnels 24, 26 by for example two operators. Alternatively, the laundry pieces can be delivered by a first transport band 78. The first transport band is disposed at about an angle of 90 degrees relative to the endless circulating transport band 20. The first transport band is furnished with compartments, which aid in the individualization of laundry pieces and which provide a substantially uniform special distance and point in dropping time distance for the laundry pieces delivered to the endless circulating transport band 20. The compartments 80 have a floor 82 and a rear wall 84 suitable for a horizontal and upward transporting motion. The compartments 80 can be chained by hinge connections 86. The hinge connections can be furnished with a wheel 88 on each end, wherein the wheels 88 are supported by and run on a respective endless support track 90.

The operator generally will throw laundry pieces into the compartments 80 of the first transport band 78. Preferably only a single piece of laundry is deposited in an individual compartment 80. If each compartment 80 of the first transport band 78 is filled with a single piece of laundry, an optimum capacity use is accomplished for the first transport band 78 and a maximum number of laundry pieces can be sorted. The speed of the first transport band is adapted to the operational speed of the recognition device 40 and

thereby also adapted to the opening speed of the receptacles, that is of the funnels (24, 26). Naturally, a separate transport band of the type of the first transport band 78 would be provided for each one of the two funnels 24, 26.

Each of the funnels 24, 26 is furnished at the bottom with a flap floor 32 comprising two flap parts 28, 30. Two sensors 34, 36 act into the region above the flap floor 32 and thereby above the two flap parts 28, 30, wherein the two sensors 34, 36 comprise two light barriers in the present embodiment. The laundry piece 12 resting on the flap floor 32 is recognized by the two sensors to 34, 36 and thereupon the flap floor 32 is opened. During this opening, the two flap parts 28, 30 flap open downwardly such that the laundry piece 12 can fall downwardly onto the transport band 20.

The flap floors 32 can be opened only simultaneously by the two funnels 24, 26 according to the present embodiment. This accomplishes that the laundry pieces 12 put down onto the transport band 20 from the two funnels 24, 26 exhibit a mutual distance in transport direction 22, wherein the mutual distance corresponds to the distance of the two funnels 24, 26 of this transport direction 22.

The laundry pieces 12 put down on the transport band 20 migrate in transport direction 22 into the region of a recognition device 40, wherein the

recognition device 40 monitors a region 44 by way of a laser 42 and recognizes individualizing a laundry piece 12 present in the region 44.

For example laundry pieces may have to be individualized and sorted which laundry pieces have extremely different sizes. These laundry pieces have to arrive individualized at the region 44 for allowing recognition by the recognition device 40. The individualization is monitored, tested and assured by the sensors 62 and 64 disposed neighboring to the region 44.

Codings are applied at the laundry pieces 12, wherein the codings allow for the laser 42 to recognize the respective laundry piece. For example it is recognized in this way, if the laundry piece is a napkin, a hand towel or a bed sheet. In each case a different coding would be present with these three laundry pieces according to the present example. The coding could contain additionally other features such as for example an identification of the respective customer or other information.

A data signal 46 is sent from the recognition device 40 to a data processing plant 50 connected to the apparatus control of the device 10, wherein the data signal 46 corresponds the read out coding. This data signal 46 is processed in the data processing plant and as a consequence thereof the laundry piece

scanned in the region 44 by the laser 42 is recognized as a napkin or as a hand towel or as a bed sheet.

It is programmed into the data processing plant 50 that for example napkins are to be sorted into the collection container 14, hand towels in the collection container 16, and bed sheets into the collection container 18. Blow nozzles 52, 54, 56 are activated by the data processing plant 50 through corresponding control signals in each case, if the respective laundry piece 12 has arrived in the region 53, 55 or 57 in front of the blow nozzles 52, 54, 56. The transport is performed by way of a transport band 60. The laundry pieces 12 leaving the recognition device 40 fall onto this transport band 60 in the case of the present example.

Sensors 62, 64 are disposed in front of and behind the recognition device 40. The sensors 62, 64, in turn generating again light barriers, recognize on the one hand if a laundry piece 12 moves into the region of the recognition device 40 (sensor 62) and on the other hand (sensor 64), if the laundry piece 12 has also again left the recognition device 40. For example, the recognition device 40 is started only then, when a laundry piece 12 has moved into the region of the sensor 62. For example, the further transport of this recognized and by the data processing plant 50 registered laundry piece 12 can be controlled by the

post disposed and switched sensor 64. Two different laundry pieces 12 are not permitted to be simultaneously present in the region of the recognition device 40. Depending on the present transport speed of the transport band 20, 60 it can then be determined at what time the laundry piece 12 present in the region of the sensor 64 will be disposed in front of the blow nozzles 52, 54, or 56. The sensor 62 and/or 64 deliver a register signal 48 to the data processing plant 50, wherein the register signal 48 contains the presence of a laundry piece 12.

The sensors 62, 64 examine in particular, if a laundry piece is present and if the respective laundry piece, if it is located in the region 44, is not registered by the sensors 62, 64 simultaneously as present. Advantageously, it would be possible to recognize by a time / distance circuit, when a laundry piece leaving the recognition device 40 and/or the region 44, which is recognized by the sensor 64, was transported by the endless circulating transport band 20 and was then transported by the transport band 60 into the region 53, or respectively 55, or respectively 57, from where it was blown into an associated collection container 14, 16, 18. The blow nozzles 52, 54, or, respectively, 56 can also be controlled through a time / distance circuit.

The blow nozzles 52, 54, 56 can also be activated correspondingly by sensors 66, 68 and 70. The sensors 66, 68, 70 are associated with respective counter sensors on the one hand on the other side transport band 60 and on the other hand diagonally opposite, such that the counter sensors 66.1 or, respectively, 68.1 and 70.1 cover on the one hand the transport band 60 and on the other hand cover the region of the blow nozzles 52, 54 and, respectively, 56. It can therefore be recognized by the corresponding light barriers 67, 69, or 71, when a laundry piece 12 moves into the region 53, 55 or 57 and then the corresponding blow nozzles 52, 54, 56 are activated as long as in each case the right laundry piece is disposed at the proper collection container 14, 16, 18. In addition it can also be recognized by this light barrier 67, 69, 71, if a laundry piece still remained on the transport band 60 after a switching off of the blow nozzles 52, 54, 56. In case the blow nozzles have been activated, then the laundry piece is not permitted to be disposed any longer in the region of the corresponding light barrier.

The control of the blow nozzles 52, 54, 56 is controlled by the data processing plant 50 through control signals 74. The signals come together in the data processing plant 50, wherein the signals are emitted by the individual sensors 32, 36, 62, 64, 66,

68, 70. In addition the data processing plant 50 receives the data signals 46 emitted by the recognition device 40, wherein the data signals 46 enable an identification of the laundry piece in each case to the effect into which collection container 14, 16, 18 the respective laundry piece 12 is to be blown by the blow nozzles 52 or 54 or 56.

Instead of the two funnels 24, 26 there can also be several such funnels be arranged. Instead of the three collection containers 14, 16, 18 there can also still more collection containers be disposed along one or several transport bands 60.

It will be understood that each of the elements described above, or two or more together, may also find a useful application in other types of transport system configurations and piece processing procedures differing from the types described above.

While the invention has been illustrated and described as embodied in the context of a device for sorting of laundry pieces, it is not intended to be limited to the details shown, since various modifications and structural changes may be made without departing in any way from the spirit of the present invention.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily

adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic or specific aspects of this invention.

What is claimed as new and desired to be protected by Letters Patent is set forth in the appended claims.

The Office Action refers to Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-16 and 18-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Regarding claims 1 and 10-12, the use of the language "can be" renders the claims indefinite. Claim limitations must be positively recited.

6. Regarding claim 4, the language "each case" renders the claim nonsensical.

7. Regarding claims 9, 21 and 27, the use of the language "and/or" in conjunction with a double negative sentence renders the claims indefinite. The language "and/or" renders the limitations of the claims unclear, especially when used in multiple situations, such as in

claims 9 and 12 and in claims 21 and 27, and in combination with a double negative.

8. Regarding claim 12, the language "can be such flipped open" renders the claim nonsensical and indefinite.

9. Regarding claims 18-22, each claim ends with a ";" thus the scope of the claims are unclear.

10. Regarding claim 28, the language "only jointly be flipped closed the flap floors" and "within each the funnel" is nonsensical and indefinite.

Applicants respectfully agree.

Claims 2, 4 through 8, 13, 15 through 17, 23, 25 through 26 continue to be in case.

Claims 1, 3, 9 through 12, 14, 18 through 22, 24, 27 through 28 are being amended.

The language of the Claims has been amended to avoid the questions raised in the office Action.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. Claims 1, 2, 8 and 23 are rejected under 35 U.S.C. 102(b) as being anticipated by Wortman et al. ("Wortman") which discloses a system and method for sorting laundry comprising a supply device (Fig. 1, el. 20), a recognition device (el. 34), collection devices (el. 114, 116, 118, 120, 122 and 124), transport devices (i.e., bands) (el. 36 and 50), a data processing plant (el. 42), and a register device which sends signals to the plant (el. 54, col. 5, In. 10-27), whereby each laundry piece is sorted based on the recognition device and associated control signals to a specific collection bin (Id.).

Applicants respectfully disagree.

Wortman uses the sorter bins (114, 116, 118, 120, 122, 124) and each bin in Wortman is associated with the deflector (for example, with deflector 126), and these deflectors are operated automatically by signals provided by the control circuit 42 with suitable delays

(page 5, lines 15-21). So, when laundry piece is stacked before the bin 122 of the Wortman, the system failure occurs, and the laundry piece could fall by mistake in the incorrect bin. In contrast to Wortman, the present application (Claim 3) teaches that the laundry piece is moved to the collection containers (14, 16, 18) with blower devices (52, 54, 56) only after the counter sensors (for example, 70 and 70.1) detect that laundry piece is located against the proper collection container. Moreover, if the laundry piece of the present application is still remained on the transport band 60, the proper blower device (52, 54 or 56) is re-activated to repeat attempt (Claim 3 of the present application).

The present application (Claim 1) uses also the additional preliminary sensors (62 and 64) for the distance or time determination of the laundry piece and for assurance that the laundry pieces are not located simultaneously in the region 44. In contrast to the present application, Wortman does not teach anything about additional sensors.

Wortman uses a radiation source 32 of the X-rays for the reading of the codings. It could be dangerous for the health of the humans who use the pieces laundered. In contrast to Wortman, the present application (Claim 1) uses laser for the reading of the

codings, and this method is absolutely safe for the humans' health.

The difference between Wortman reference and the present application is very strong, so the Wortman reference does not anticipate or render obvious the claims of the present application.

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

14. Claims 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wortman in view of what is well known in the art.

15. Wortman, as discussed above, teaches all that is claimed except for explicitly teaching, inter alia, multiple sensors (i.e., register devices) associated with each collection bin, multiple drop bottom feed bins, and a plurality of fluid jets for ejecting the laundry.

The Wortman reference is respectfully traversed as above.

Moreover, Wortman uses a conventional blower 26 for the laundry piece delivering to the conveyor 28. This method does not guarantee that each laundry piece is conveying separately, and for this reason Wortman even uses additional details (shaft encoder 52 and photodetector 54 of Wortman) for re-entry into hopper 20 or for manual handling (page 5, line 26). In contrast to Wortman, the present application (claims 10,27) uses the preliminary (first) transport band 90, which provides the individualization of the laundry pieces already in the stage of the laundry piece delivering.

The present application (claim 9,21) teaches about the determination of laundry pieces by distance or by time. Wortman does not provide such capability.

The present application (Claims 4,5,6,7, 18,19,20,25,26) uses the registering devices 66,68,70 for each collection device. Wortman uses only one

registering device (detector 34), but he does not teach anything separate registering devices for each collection device.

16. Here, it is important to note that Wortman reads on the essence of Applicant's invention and that Applicant's additional limitations are well known in the laundry sorting art. For instance, Burson teaches the use an air jet for sorting linens (Fig. 1) and Aiuola further teaches that air jets are well-suited for handling delicate articles such as laundry (col. 1, In. 5-55). Weiss explicitly teaches the use of predisposed sensors for each receiving station to better coordinate the release of each article (Abstract) and it is also well known in the sorting arts to use redundant sensors to ensure that an apparatus is functioning properly. Further, Lane (el. E) and Rydell (Fig. 1) teach the use of flap floor bins (i.e., funnels) that monitor laundry characteristics such as weight and volume to regulate the inflow of laundry (Abstract). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the invention of Wortman as is well known in the art.

Applicants respectfully disagree.

The present application (Claims 3, 24) uses the horizontal blower devices (52, 54, 56) located perpendicular to the band against each collection container (respectively, 14, 16 and 18).

In contrast to the present application, Burson uses the pipe 68, and the pipe 68 is provided with a plurality of apertures 72 adapted to direct air UPWARDLY through the conveyor belt 12 (column 5, line 59-61). It is unclear from the Burson reference drawing, as well as from its claims and description, how the laundry piece could be moved with the pressured air in any direction, because the only possible direction of the moving is the upward from the conveyor belt 12.

Burson teaches that the several receptacles are positioned alongside the conveyor belt (column 5, lines 66-68), but the Burson's ejector 64 has no device for the laundry piece distribution by receptacles in various directions, and the apertures 72 in Burson have the stable upward position and the apertures 72 could blow the laundry pieces only in the one direction - upwardly, if it's necessary and possible at all to move the laundry pieces upwardly.

So, the Burson reference is absolutely unable to work for the present application, and the Burson reference does not anticipate or render obvious the claims of the present application.

Aiuola uses that the only one nozzle 17 is located at the beginning of the channel 10-11 (column 2, lines 65-66), and the compressed air pushes the object 2 along the channel only which acts as a guide. In contrast to the Aiuola reference, the present application uses no guides at all, but instead of the guides the present application uses several blowing nozzles for each collection container 14, 16 or 18 (please see the Drawings 1 of the present application - there are three blower devices, e.g. 56 for collection container 18). The multi-nozzle construction in the present application is much more safe (against the nozzle clogging), light, movable and convenient than the one of the Aiuola reference.

Aiuola also uses the nozzle to push delicate articles in the direction of the band, and in contrast to Aiuola, the present application teaches (Claims 3, 24) that the blower devices are directed perpendicularly to the direction of the transport device (60).

While in the present application and other references the one of the main task is the laundry piece separation for the following laundry, Weiss reference solves another task: the articles 12 are already separated, presorted and located permanently on separate hangers 16; and the main task of the Weiss

reference is the ordering of the items. The Weiss reference suitable mostly for the closing articles or for garment which already have been cleaned, dried, and, if necessary, pressed (column 5, lines 28-30). Weiss uses sensors devices (134, 136) only for ordering articles 12 within each receiving station (e.g. 24-1, 24-2), but not for the article separation and pre-sorting, like in the present application.

So, Weiss reference does not anticipate or render obvious the claims of the present application.

Lane and Rydell use the ordinary flap floor bins (funnels) that are opened manually or automatically after the required weight or volume reaching; only then the funnels release the laundry pieces for the laundry.

In contrast to Lane and Rydell references, the present invention uses several funnels 24, 26 (Claims 11,14) for the preliminary individualization of the laundry pieces, each funnel flap floor (32) could be formed from several flap parts 28, 30 (Claim 13, 21, 22), and sensors within 34, 36 the funnel command to open the funnels' flap floors simultaneously and jointly only after reaching of a predetermined number or volume of laundry (12) on each flap parts (28, 30), and the sensor provides the distance or time determination of the laundry pieces (Claims 12, 14, 15, 16, 28). Such determination of laundry pieces by distance/time is the one of the main features of the

present application, and this feature is totally absent in Lane and Rydell references.

So, both Lane and Rydell do not anticipate or render obvious the claims of the present application.

Applicants submit that the prior art made of record neither anticipates nor renders obvious the present invention.

Reconsideration of all outstanding rejections is respectfully requested.

If the Examiner should not be able to find a certain element of Applicants' claims in a search of the state of the art and such element is deemed by the Examiner to be necessary for forming a basis for a rejection, then the Examiner is invited to inform the Applicants of such element in order to allow the Applicants to fully meet their disclosure requirement in view of innumerable and hypothetical possibilities of combining references to allege obviousness of individual claims. In particular, in view of different levels of familiarity of inventors with the information

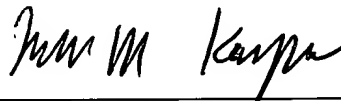
disclosure requirements of the United States Patent and Trademark Office developed in recent years and apparently still developing, which disclosure requirements are believed to be unique in the world, any help and suggestions regarding possible problems seen by the Examiner are welcome.

All claims as presently submitted are deemed to be in form for allowance and an early notice of allowance is earnestly solicited.

Respectfully submitted,

Karl-Heinz Ellenberger et al.

By:



Horst M. Kasper, their attorney
13 Forest Drive, Warren, N.J. 07059
Tel: (908) 757-2839 Fax: (908) 668-5262
Reg.No. 28,559 Docket No.: Mlr206

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